

WHAT IS CLAIMED IS:

1 1. A plasma display panel, comprising:
2 a first and a second transparent substrate opposing one another;
3 a plurality of first electrodes in parallel disposed on the first transparent substrate;
4 a plurality of second electrodes in parallel disposed on the second transparent substrate, the
5 second electrodes being formed to intersect the first electrodes; and
6 a plurality of concave portions formed in said second transparent plate, each concave section
7 corresponding to a concave surface, wherein corresponding ones of said plurality of second
8 electrodes are disposed at bottoms of corresponding ones of said plurality of concave portions, with
9 ridges are disposed between adjacent concave portions, each ridge having a top surface made of a
10 water repellant film.

1 2. The plasma display panel of claim 1, wherein each second electrode having a flat top
2 surface that extends from a first point of each concave surface to a second point of said concave
3 surface, each second electrode having a convex bottom surface that mates with an entire portion of
4 said concave surface between said first point and said second point, said convex bottom surface each
5 second electrode meets with said flat top surface of said second electrode at said first and said second
6 points of said concave surface.

1 3. The plasma display panel of claim 1, wherein each second electrode having a flat top
2 surface that is parallel to said top surface of each ridge, said top surface of each second electrode

3 being bounded by said concave portions.

1 4. The plasma display panel of claim 1, further comprising phosphor material within said
2 concave portions, said phosphor material being on top of the second electrodes.

1 5. A method for manufacturing a plasma display panel, comprising the steps of:
2 forming concave sections on a first surface of a transparent substrate;
3 supplying a conductive liquid material comprising conductive particles to the concave
4 sections;

5 keeping still the transparent substrate with the conductive liquid material thereon to cause
6 the conductive particles in the conductive liquid material to precipitate to a bottom surface of each
7 concave section; and

8 heating the transparent substrate with the precipitated conductive liquid thereon to form
9 electrically conductive electrodes at the bottom of each concave section from the precipitate at the
10 bottom of each concave section.

1 6. The method of claim 5, further comprising the step of forming on the first surface of the
2 transparent substrate a liquid repellent layer having liquid repellency with respect to the conductive
3 liquid material, the formation of the liquid repellent layer being performed before forming the
4 concave sections, said liquid repellent material being present between adjacent concave sections after
5 the formation of the concave sections.

1 7. The method of claim 5, wherein in the process of supplying the conductive liquid material,
2 the conductive liquid material is deposited on the first surface of the transparent substrate to fill the
3 concave sections with the conductive liquid material.

1 8. The method of claim 5, wherein in the process of supplying the conductive liquid material,
2 a supply apparatus is used to supply the conductive liquid material to fill the concave sections with
3 the conductive liquid material.

1 9. The method of claim 5, further comprising the step of depositing a phosphor layer within
2 the concave sections on top of the electrically conductive electrodes formed within the concave
3 sections.

1 10. A plasma display panel, comprising:
2 a first and a second transparent substrate facing one another;
3 a plurality of first electrodes disposed in parallel on the first transparent substrates;
4 a plurality of second electrodes disposed in parallel on the second transparent substrate, the
5 second electrodes being formed to intersect the first electrodes; and
6 a plurality of concave sections formed in said second transparent plate, wherein ones of said
7 plurality of second electrodes being disposed at a bottom of corresponding ones of said plurality of
8 concave sections, each concave section having a concave surface, wherein each second electrode

9 having a flat top surface that extends from a first portion of the concave surface to a second portion
10 of the concave surface, each second electrode having a bottom surface that mates with an entire
11 portion of the concave surface between said first portion and said second portion, said bottom
12 surface of each second electrode being convex, said bottom surface of each second electrode joins
13 said top flat surface at said first and said second portions of said concave surface.

1 11. The plasma display panel of claim 10, further comprising a protrusion protruding upward
2 from a bottom of said concave surface, wherein a first portion of said second electrode being on a
3 first side of said protrusion and a second portion of said second electrode being on a second and
4 opposite side of said protrusion, said first and said second portion of said second electrode being
5 physically and electrically separated from each other by said protrusion.

1 12. The plasma display panel of claim 10, wherein a height of each protrusion is less than one
2 half of a depth of each concave section.

1 13. The plasma display panel of claim 11, wherein ridges are disposed between adjacent
2 concave sections, each ridge having a top surface made of a water repellant film.

1 14. The plasma display panel of claim 10, further comprising a phosphor layer disposed in
2 each concave section and on top of the second electrodes.

1 15. A method for manufacturing a plasma display panel, comprising the steps of:
2 forming and patterning a resist film on a first surface of transparent glass substrate;
3 forming, simultaneously, concave sections and the protrusions within the concave sections
4 in the first surface of the transparent substrate using the resist film;
5 supplying a conductive liquid material comprising conductive particles to the concave
6 sections; and
7 maintaining the conductive liquid still to precipitate the conductive particles from the
8 conductive liquid to a bottom of the concave sections formed in the first surface of the transparent
9 substrate, wherein conductive particles do not form on the protrusions in the concave sections; and
10 heating the precipitated conductive particles to form second electrodes in each of the concave
11 sections, wherein said second electrodes do not form on said protrusions.

1 16. The method of claim 15, further comprising the step of forming on the first surface of the
2 transparent substrate a liquid repellent layer having repellency with respect to the conductive liquid
3 material, the formation of the liquid repellent layer being performed before forming the resist film,
4 the liquid repellent layer being present in spaces between concave sections after formation of the
5 concave sections and after formation of the protrusions.

1 17. The method of claim 15, wherein in the process of supplying the conductive liquid
2 material, the conductive liquid material is deposited on the first surface of the transparent substrate
3 to fill the concave sections with the conductive liquid material.

1 18. The method of claim 15, wherein in the process of supplying the conductive liquid
2 material, a supply apparatus is used to supply the conductive liquid material to fill the concave
3 sections with the conductive liquid material.

1 19. The method of claim 15, further comprising the step of depositing a phosphor layer in
2 each concave section on top of said second electrodes.